

INTESTINAL INTUSSUSCEPTION.*

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INTESTINAL intussusception is one of the last of the serious intestinal lesions to yield good results by surgical means, and yet the very nature of the trouble makes it purely a surgical disease. The general mortality of this malady has been variously estimated at from seventy per cent. to ninety per cent. and modern surgery has not so far lessened it to any great degree. This, I believe, is due to the fact that we are relying largely upon the mortality tables of the older operators which were compiled before the inauguration of modern methods in intestinal surgery. A few years ago some authorities estimated mortality of gastro-enterostomy at thirty per cent., or considered an intestinal excision as an exceedingly serious matter. To-day the mortality of these operations in the hands of surgeons doing a great deal of that work is not materially greater than the operation for appendicitis. The great diminution in the death rate in this latter class of cases is due, first, to the fact that formerly the conditions were not diagnosed until the patient was moribund. Secondly, the technical methods of operating were deficient. Now the diagnosis is made earlier, while the patient yet has vitality, and the operation is done more skilfully—hence the lessened mortality. The conditions mentioned above, which existed in stomach surgery ten years ago, still exist in relation to acute intestinal obstruction. Progress in the treatment of this class of cases has been delayed longer than in stomach cases because of the acuteness of the condition, thus depriving the practitioner of time for deliberate study of his case and preventing his making a diagnosis until the vital-

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ity of the patient is exhausted, while diseases of the stomach and gall-bladder are usually chronic and allow time for deliberation and investigation. Intestinal intussusception, or invagination, which comprises more than thirty per cent. of all acute intestinal obstructions, is more fatal than other forms of obstruction because of greater difficulty in making an early diagnosis. In most other forms of intestinal obstruction, the occlusion of the lumen of the bowel is almost or quite complete, which is not the case in intussusception. The one misleading feature in intussusception is that in a great many cases the obstruction is not complete and the bowels act, gas passes and there is little or no distension. Another reason for the great mortality is that it most frequently occurs in children, and the practitioner is at a loss to differentiate between this condition and an ordinary gastro-intestinal disturbance or colic; for before he is called some one has given a large dose of castor oil which may have been effectual. Thus the doctor is misled until the patient is almost dead; an infant is a poor subject in acute abdominal diseases for surgery.

Without going into detail I think we can say in a general way that the three most frequent causes are, (1) A congenital laxness of the structures in the neighborhood of the ileocaecal valve.* (2) A partial or complete intestinal obstruction by a growth or some form of constriction. (3) The presence of a pedunculated tumor within the lumen of the intestine. All these causes are made effectual or active by the normal peristaltic action of the intestine, which tends to grip any foreign or unusual body and force it on down the intestinal tract. It has been my fortune to have seen quite recently, cases of intussusception produced by each of these causes. I may mention two cases of the first type.

One was a three-year-old child in which there was not more than an inch of invagination. There was very little ob-

*This the writer has studied with interest in intestinal experiments in which the motor nerves of the intestine had been cut, thereby producing paralysis and intussusception.

struction and almost no trouble in reducing it. The symptoms were nausea, vomiting and pain in the neighborhood of the umbilicus, which symptoms had existed for several days. Marked marasmus existed. Cathartics, however, produced results. The diagnosis was not made positive until the abdomen had been opened. The intussusception was easily reduced and the intestine was sutured to the mesentery, thus partially rolling the intestine up in its mesentery, as shown in Fig. 1., to prevent recurrence of intussusception. Patient recovered.

Another case was one in which the patient was nine years old and in which the cæcum, appendix and ileocæcal valve had formed an intussusception. This was very acute and had only existed a few hours. The condition was so acute as to require the services of a physician from the very beginning. The patient suffered with great pain and distress, resembling an acute appendicitis, but as there was a decidedly palpable tumor so soon after the onset of the attack, we were able to rule out appendicitis. It was easily reduced and the cæcum was sutured to the peritoneum in its neighborhood, as recommended by the authorities, and the ileum was rolled up in its mesentery as shown in Fig. 1. Patient recovered.

The third case was that of a Chinaman about fifty years of age. This was due to the second cause mentioned above. I was called in consultation with Drs. Locke and Gullette. The patient had had no action of the bowels for thirteen days and was in an extreme condition. Within twenty-four hours preceding operation a tumor was discovered protruding through the anus which examination proved to be the apex of an intussusception. We did an abdominal section, and, by pushing up from below through the rectum, we were able to reduce the intussusception but found practically a complete obstruction which proved to be a carcinoma involving almost the entire circumference of the gut at the sigmoid flexure. So we did an incision and an anastomosis which was very effectual, as was shown by his passing a large quantity of dark malodorous fæcal matter by the anus at once. He lived for more than two days and then died of stercoremia and peritonitis. While this was a very desperate case, I feel that if I were doing another case, I would not perform the operation in exactly the same way, but would prefer to do it in two stages. The point I wish to illustrate by this case

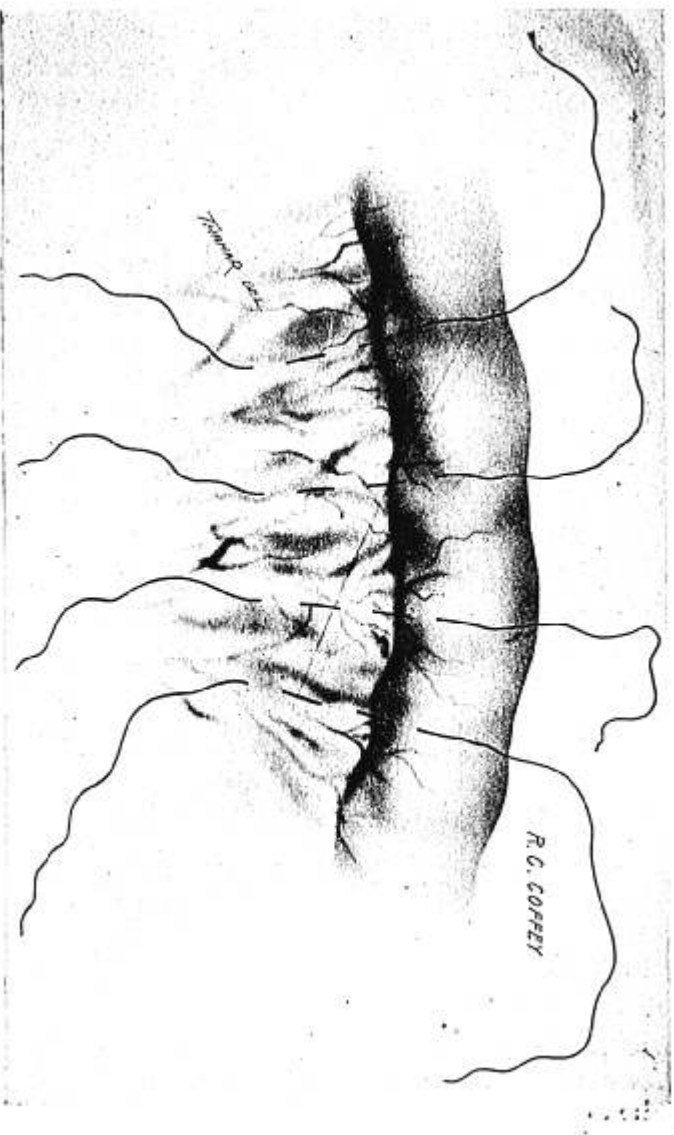


FIG. 1.—Rolling intestine in its mesentery to prevent recurrence of intussusception.

is that a movable tumor, even though it is in the form of a stricture, is a prolific cause of intussusception, especially if in the region of the sigmoid flexure.

The last case which I wish to relate, and which was the subject from which the accompanying pictures were made, is a classic one in many ways. I have therefore attempted to illustrate it. Fig. 2 illustrates the pathological conditions existing. The case has several ideal features as far as description is concerned. First, it is a simple and yet extensive intussusception and involves that part of the intestine most frequently affected. Second, it has the most ideal cause, viz., a pedunculated growth within the intestine on which the peristaltic wave may act. Third, this particular growth happens to be a structure which has often hitherto been overlooked (a Meckel's diverticulum), which in this instance was inverted. (Authorities generally agree that a Meckel's diverticulum is present in some form in two per cent. of all human beings; therefore it is probably the cause of more cases of intussusception than we have recognized.) Fourth, it is ideal in its pathologic termination, viz., gangrene was produced. Fifth, it was ideal in that the lumen was still patulous despite its great length. Sixth, we used what in my opinion is the ideal treatment for a gangrenous intussusception (radical removal), notwithstanding the reports of most of the operators indicate its inadvisability. The history of the case is briefly as follows, as related by the patient's mother.

Patient aged 7 years. When he was two years old he had severe cramps, with cold perspiration standing out on his face and body, lasting about thirty-six hours. During the attack, enormous doses of cathartic medicines were administered, most of which were vomited. Finally an action was produced which contained quantities of blackberry seeds, and to their presence was attributed the attack by the physician and the people. During this attack he vomited every few minutes. From this time he had an attack about every month, varying in severity, but one striking feature was that he always passed blood at every

attack. Sometimes his attacks would occur every week. This state of affairs kept up for four years, when he had a very severe attack, with jaundice, and passed a lot of blood. This attack, which was about one year ago, began at 7 A. M. (and we may here state that all the attacks began at this time of day). In the afternoon at 6 P. M. he was better, and was better the next day. He never had fever during any of these attacks. From this one, just described, to the beginning of the present, he had light spells, no blood passing. Three weeks prior to this final attack, he had one which was quite severe, but which lasted only a few hours. This time he did not vomit but was nauseated.

On Sunday, June 8, 1906, he had a very severe attack, screamed with pain, had great pallor, and cold perspiration. Vomited every few minutes during the day. Was better, apparently, at 4 P. M. when cramps ceased, but vomiting continued until 7 P. M. Then he was hungry and was given bread and milk, but the soreness in his bowels did not cease as usual, and on Monday he remained in bed with but little appetite. On Tuesday he was still sore but was up a portion of the day, his bowels acting without a cathartic. Wednesday he played vigorously and was apparently as well as usual. Friday morning at 7 A. M. he was seized with a very severe attack, similar to the others, when his mother began to give castoria in large doses but found it was not effectual as it had been in previous attacks. Dr. Alice Hall Chapman, of Woodland, Washington, was called at this time and arrived at 12.30 P. M., remaining for two hours, injecting salts, castor oil, etc., and finally suspending him by his feet for an hour to cause the enemata to go high in the bowel. Finding this inefficient she advised them to bring him to the hospital, which, owing to the out-of-the-way place and poor facilities for travel, required a good deal of time to reach Portland. On the way to the hospital his bowels acted and he passed some gas and very dark fluid and fecal matter, but nothing that could be identified as blood. After this he had no pain. He arrived at the hospital at noon, Saturday, June 14.

On admission he presented sunken features and the characteristic expression of a serious abdominal trouble. There was no distension. A large mass was palpable on the right side extending up under the ribs. He was taken immediately to the operating room and the abdomen opened. The intussusception

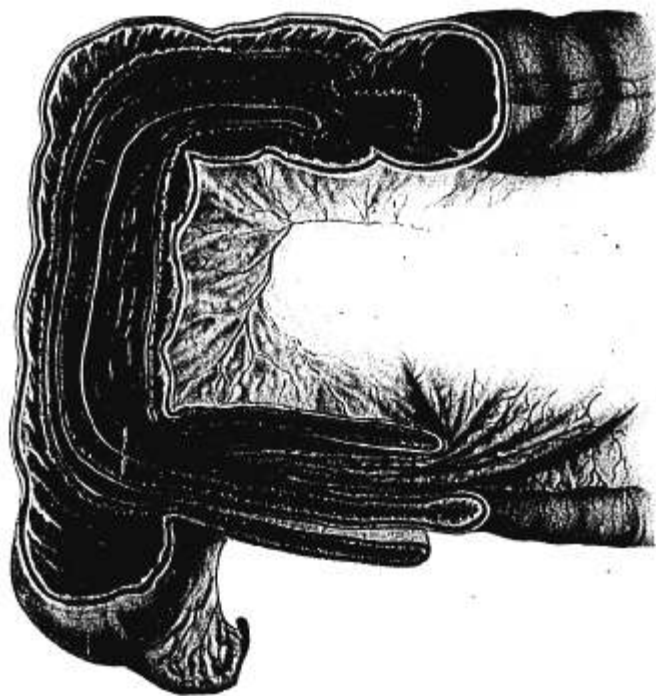


FIG. 2.—Sectional view of extensive gangrenous intussusception, due to an inverted Meckel's diverticulum.

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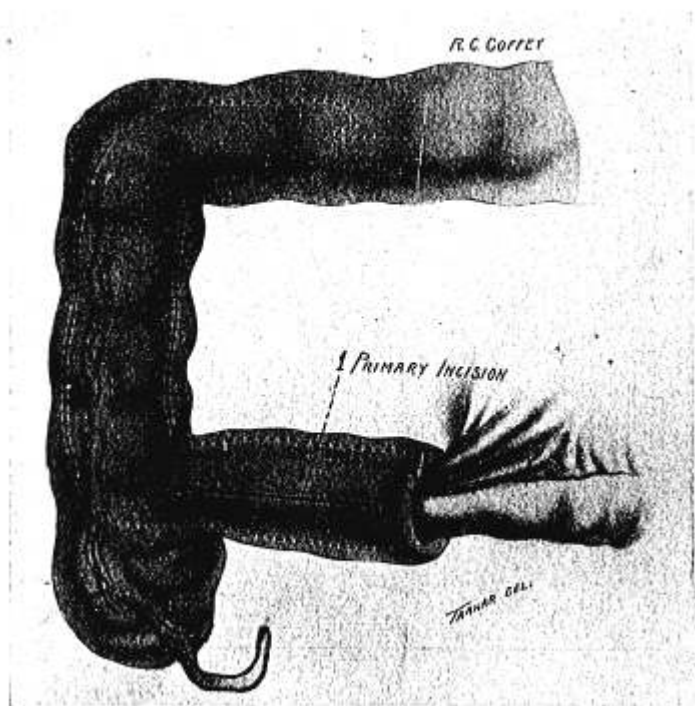


FIG. 3.—Diagram showing incision through which intussusceptum was removed (indicated likewise in succeeding pictures).

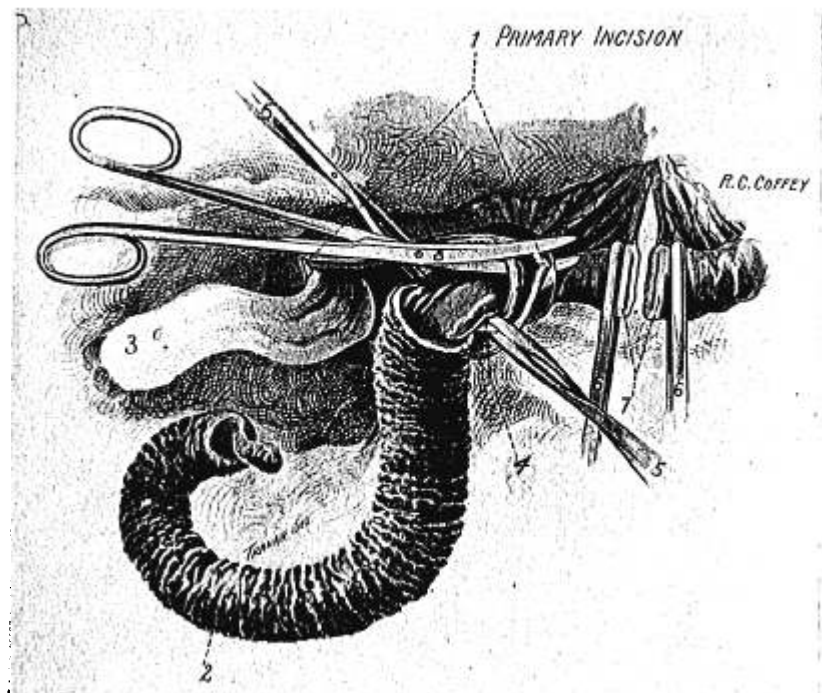


FIG. 4.—Steps in operation. 1. Make primary incision indicated in Fig. 3. 2. Withdraw intussusceptum and wrap in gauze. 3. Pack distal end of intestine with gauze. 4. Cut middle layer of intussusceptum by circular incision. 5. Catch bleeding arteries with forceps. 6. Clamp healthy intestine with two forceps. 7. Cut between forceps. 8. Complete primary incision, laying open distal end of the ileum and freeing intestine to be removed.

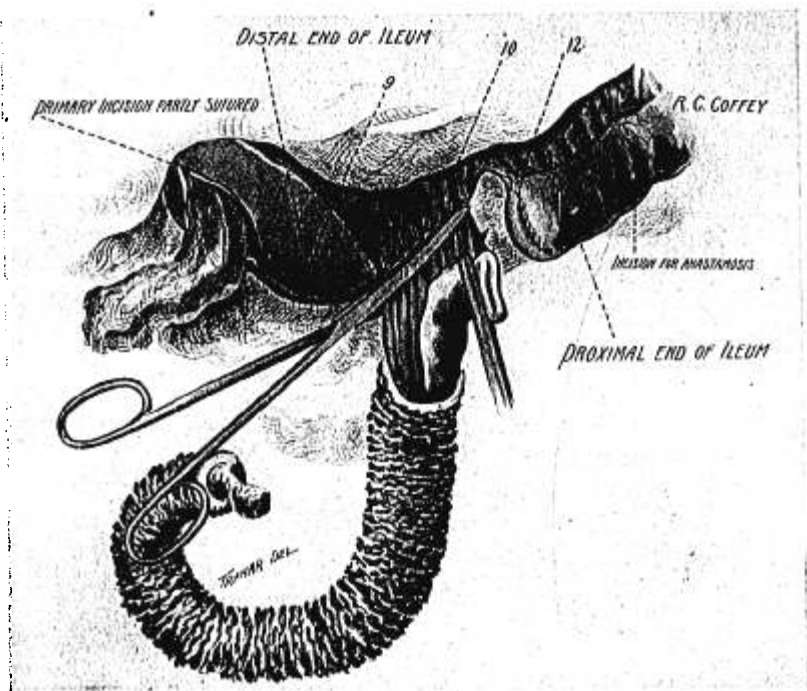


FIG. 5.—Steps in operation. 9. Partly suture distal end of the ileum. 10. Ligate mesentery in sections. 11. Cut mesentery and remove gangrenous intestine. 12. Suture proximal end of the ileum.

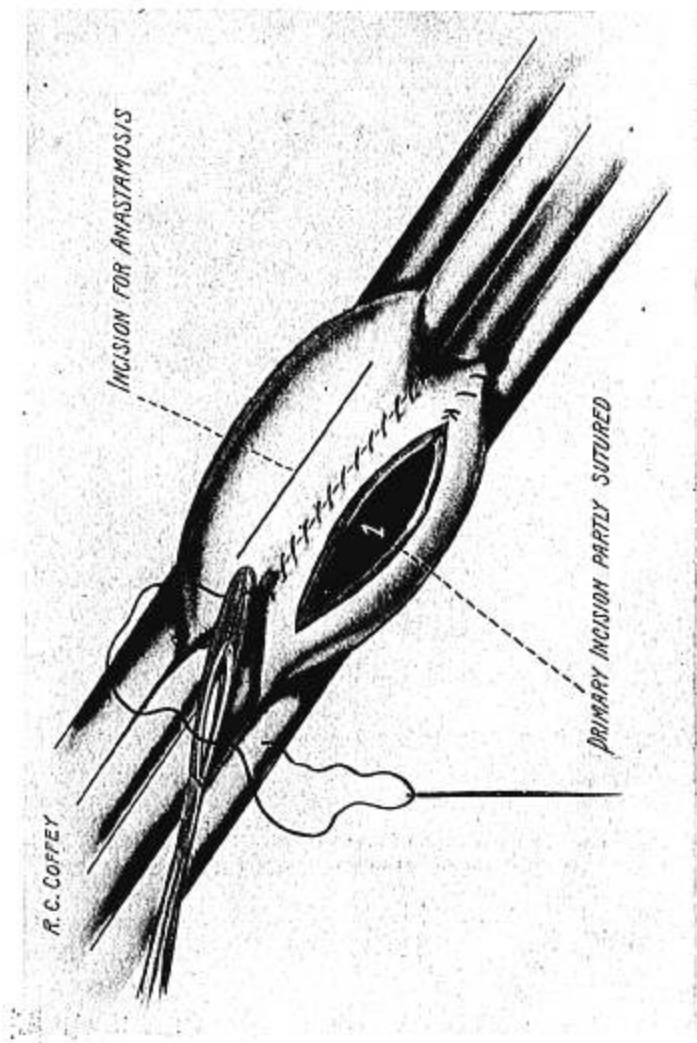


FIG. 6.—Make lateral anastomosis between the proximal end of the ileum and the distal end of the ileum at the primary incision by the method usually used in doing gastro-enterostomy.

shown in the picture was found and identified. The abdomen was packed full of gauze to prevent exposure of the other intestines. We then tried for several minutes to reduce the intussusception but found it impossible; so after packing many layers of gauze and delivering the affected part of the intestine to the surface, we made the primary incision (1) as shown in Figs. 3 and 4, and mopped out all the fluid in sight. We found the enclosed intestine gangrenous and that there existed a constriction at the ileocæcal valve, necessitating a partial cutting of the valve. (2) The intussusception was then withdrawn and wrapped in gauze. (3) The fluid inside the intestine was mopped out with sponges and a long piece of gauze was packed into the cæcum to prevent regurgitation of intestinal contents. (4) The second layer of intestine was cut in two in its circumference. (5) The edges of the intestine were clamped at the bleeding point to control hæmorrhage. (6) The ileum was then clamped and (7) cut. (8) The cæcal stump of the ileum was slit wide open with scissors by extending the primary incision. (9) This was sutured partially, leaving an opening large enough for an anastomosis (Fig. 5.) After this the gangrenous portion of intestine was left hanging by its mesentery only. (10) This was ligated in sections and (11) cut with scissors. (12) The proximal end of the ileum was sutured and the clamps removed. The distal and proximal ends as indicated were brought together and an anastomosis was made with clamps, as shown in Fig. 6. The patient was not seriously shocked by the operation, but very small hopes were entertained of his living. The next day his temperature went to the neighborhood of 106°, which symptom is pointed out by Barker as being peculiar to these cases. This patient made a complete recovery and has remained so for four months.

For some reason radical operation has not been as successful as we would naturally suppose, and most of the cases of gangrenous intussusception are fatal. Barker has devised a means of cutting off the intestine within the intussusciptions, suturing the peritoneal layers together as they lie in contact, and then suturing the edges of the peritoneum at the beginning of the intussusception. I believe it is not considered to be very effectual in gangrenous cases. This operation has found considerable favor in

the hands of most surgeons and is considered a good compromise between no operation and radical operation, but has the disadvantage that, even if the patient recovers, a stricture is likely to occur which finally requires a secondary operation or produces death. Treves states that cases where suturing has been carried out, whether gangrenous or not, have had a mortality of about 86 per cent. Concerning the gangrenous cases, Moynihan quotes Barker as saying "He had never seen recovery after resection in gangrenous cases and never expected to see it. The only hope lay in early operation."

We are prepared to agree with Mr. Barker that the only hope for greatly reducing the mortality in these cases is in early diagnosis and early operation, which, like appendicitis, if done in the first twenty-four hours is usually found reducable and with not a very large mortality, except in young infants. The harm is done by the use of cathartics and the temporizing with all kinds of remedies, hoping to finally avoid operation, when in reality the surgeon should be called as soon as the trouble is suspected. If the surgeon occasionally opens an abdomen in which there is no obstruction he will do very little harm. The results in this case here related have strengthened the belief that I have held for some time that there should be no great difference in the excision of a gangrenous intussusception and a gangrenous intestine under other circumstances. The method here described was adopted for the occasion and is applicable in cases of extensive gangrenous intussusceptions in which too much intestine is involved in the intussusciptions to justify excision of the entire mass, including the intussusciptions. I am of the opinion that radical excision for gangrenous intussusception will in the future be done more frequently and successfully than it has in the past, though, of course, a conservative compromise will be necessary in many cases. I believe the method described in this case is cleaner than any other method I have seen described for extensive gangrene, and I would certainly do the operation in a similar manner in another similar case.